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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,999	02/19/2002	Yoshiaki Nakamura	501.40631X00	2964
20457	7590	01/24/2006	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP 1300 NORTH SEVENTEENTH STREET SUITE 1800 ARLINGTON, VA 22209-3873			CALEY, MICHAEL H	
		ART UNIT	PAPER NUMBER	
			2871	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,999	NAKAMURA ET AL.	
	Examiner Michael H. Caley	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 02 November 2005.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 4-6,10-16 and 19-33 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 4-6,10-16 and 19-33 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 19 February 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>11022005</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 25, 26, 30, and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification is not enabling for a light diffusing layer having a transmittance less than 30% or between 10% and 30%. The specification discloses the light diffusing layer as constructed from a transparent acrylic resin and transparent particles in which the acrylic resin has a refractive index different from the transparent particles to produce light scattering (Pages 13 and 14). The specification further states that the light absorption of the diffusing layer is small within the visible light range (Page 14). The light diffusing layer is also specified as having a maximum light reflectance of 14% (Page 18). Given that the light absorption of the light diffusing layer is small and the reflectance is no greater than 14%, it is logical that the transmittance would be near 86%. U.S. Patent No. 6,801,276 to Epstein shows a similarly constructed adhesive light diffusing layer (Column 7 line 66 – Column 8 line 16) having a transmittance between 89% and 90%. The specification provides no direction as to how a diffuser may be constructed that has a low reflectance and absorption while having a transmittance between 10% and 30%. Furthermore,

the specification provides no guidance for the method of constructing a diffuser having a transmittance vastly different from those of the prior art (e.g. Epstein) while being constructed from similar materials.

Claims 27, 28, 32, and 33 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Page 18 of the specification describes Figure 6 as showing the reflection spectral characteristics 34 of the metal reflecting layer. Figure 6 shows the curve 34 as varying between approximately 80% and 99% reflectance. The specification contains no other references to the reflectance of the metal reflecting layer. Accordingly, the specification does not convey that the inventors had possession of the claimed metal reflecting layer having reflectance of less than 30% or between 10% and 30% at the time the application was filed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 25, 26, 30, and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim

term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “transmittance” is used in claims 25, 26, 30, and 31. The accepted meaning of transmittance is “the fraction of radiant energy that having entered a layer of absorbing material reaches its farther boundary” (Merriam Webster’s Collegiate Dictionary, 2001). For various reasons, it appears that Applicant is using a different meaning than the accepted meaning for the term, however, Applicant’s intended meaning for the term is not readily perceivable. For example, Applicant defines haze (Page 17) as T_t (total light beam transmittance) / T_d (diffusion transmittance) $\times 100$. The formula suggests that the total transmittance is a value smaller than the diffusion transmittance, which is contrary to the general accepted meanings of the terms in the art. Applicant’s formula for haze is different from the accepted formula for haze in the art: $H = T_d/T_t \times 100$ (See for example U.S. Patent No. 5,753,937, U.S. Patent No. 6,348,960, U.S. Patent No. 6,559,909). It is unclear to the examiner whether these inconsistencies result from a typographical error in Applicant’s formula for haze or if Applicant intends a definition for transmittance different from the accepted meaning of the term. Furthermore, the low value of transmittance (see above 112 First Paragraph enablement rejection) further suggests that Applicant may intend a definition different from the accepted meaning.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4, 6, 10, 11, 13, 14, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo (U.S. Patent No. 6,144,430) in view of Aoyama (U.S. Patent No. 5,663,777) and Epstein et al. (U.S. Patent No. 6,801,276 “Epstein”).

Regarding claim 4, Kuo discloses a liquid crystal display device having:

a liquid crystal display panel (Figure 3) which sandwiches a liquid crystal layer (Figure 3 element 309) between a first substrate (Figure 3 element 305) and a second substrate (Figure 3 element 306), a metal reflecting layer (Figure 3 element 304) which is mounted on the first substrate and reflects light, and a light diffusing layer (Figure 3 element 303) which is mounted on the second substrate, the light diffusing layer having a light diffusing material made of particles (Column 3 lines 47-53).

Kuo is silent on the kind of material used for the particles and the spectral characteristics of the light diffusing layer and the metal reflecting layer. Epstein, however, teaches a light diffusing layer having light diffusing material made of organic particles wherein the transmission spectral characteristics of a visible light region are of a flat type (Figure 3 element 308; Figure 6E element 617; Column 8 lines 4-8). Epstein teaches such a diffusion layer as advantageous to increase the viewing angle of the device and to make intensity variations less visible to the viewer (Column 1 lines 15-19). Aoyama teaches a metal reflecting layer wherein the reflection spectral characteristics of a visible light region are of a flat type (Figure 11 elements 93-95; Column 15 line 3 – Column 16 line 5). Aoyama teaches such a metal reflecting layer as

advantageous to increase the brightness of the display while minimizing fluctuation of reflectance at various wavelengths.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the light diffusing layer and metal reflecting layer disclosed by Kuo such that the transmission spectral characteristics be of a flat type by means of the diffusing layer having organic particles and the reflection spectral characteristics be of a flat type. It is a general design goal in the art to construct metal reflecting layers and diffusers such as disclosed by Kuo to have uniform transmittance and reflectance characteristics across the range of visible light. Uneven spectral characteristics of such elements are known to disrupt the desired color tone by undesirably tinting the displayed colors. Aoyama, for example, teaches a preferred deviation between wavelengths as within the range of 0% to 6% (Column 15 line 3 – Column 16 line 5). One would have been motivated to construct the diffusing and reflecting elements disclosed by Kuo to have spectral characteristics of a flat type to display an image having optimal color tone and high brightness across all visible wavelengths.

Regarding claim 6, Kuo as modified by Aoyama and Epstein discloses color filter films as provided to an inner surface of either one of the first substrate or the second substrate (Column 3 line 32).

Regarding claims 10, 13, 21-23, and 24, Kuo as modified by Aoyama and Epstein discloses a difference between the maximum and the minimum of a transmittance of the light

diffusing layer and the reflectance of the metal reflecting layer as not larger than 20% in a visible light region (Aoyama: Figure 11 elements 93-95; Epstein: Figure 6E element 17).

Regarding claim 11, Kuo as modified by Aoyama and Epstein discloses the transmission spectral characteristics of a visible light region of the light diffusing layer as made to match the reflection spectral characteristics of a visible light region of the metal reflecting layer (Aoyama: Figure 11 elements 93-95; Epstein: Figure 6E element 17).

Regarding claims 14, 16, 19, and 29, Kuo as modified by Aoyama and Epstein discloses the light diffusing layer as including an adhesive agent into which light diffusion material is mixed (Epstein: Column 7 line 66 – Column 8 line 16).

Regarding claim 20, Kuo as modified by Aoyama and Epstein discloses the diameter of the light diffusing material as in a range of 3 microns to 10 microns (Column 8 lines 4-8).

Claims 5, 12, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuo in view of Aoyama and Epstein and in further view of Nakabayashi et al. (U.S. Patent No. 6,379,017 “Nakabayashi”).

Kuo as modified by Aoyama and Epstein fails to disclose an auxiliary light source for illuminating an upper surface of the liquid crystal display panel and an input device for inputting data as arranged over the light diffusing layer. Nakabayashi, however, teaches an auxiliary light

source and input device as arranged over a reflective liquid crystal display (Figure 39; Column 31 line 62 – Column 32 line 13), such as disclosed by Kuo.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have arranged an auxiliary light source and input device over the diffusing layer as proposed. Nakabayashi teaches the auxiliary light source as advantageous to enable screen display for use of the display in areas of insufficient light (Column 1 lines 20-27). Furthermore, Nakabayashi teaches the input device as advantageous to allow the user of the display to conveniently input data by finger or pen (Column 31 lines 62-65). One would have been motivated to arrange the light source and input device over the diffusing layer to allow for versatile use of the display device as a personal digital assistant (PDA) similar to conventional devices of the art. Likewise, a PDA may be implemented advantageously in a reflective display as disclosed by Kuo due to its ability to make use of ambient light to conserve energy.

Response to Arguments

Applicant's arguments filed 11/2/05 have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the

applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

The combination of references used in the rejection of claim 4 is proper given that clear motivation for the combination is present in the references. Epstein teaches that a flat transmission spectrum of the diffuser allows for good color quality of the display because it imparts little unwanted color to the transmitted light (Column 10 lines 38-43). Aoyama teaches a flat reflectance spectrum as advantageous to minimize reflectance fluctuation at various wavelengths (Column 15 line 3 – Column 16 line 5). Although the disclosure of a flat transmission spectrum of the diffuser and reflector are not made in a single reference, it is obvious to one of ordinary skill in the art from the references that a non-flat type diffuser or reflector would result in some color quality degradation in the display. This conclusion does not rely on any information provided by Applicant's disclosure.

On Page 13 of Remarks, Applicant further states that it is unclear how, or why, a skilled artisan reviewing the disclosure of Kuo would have been motivated to seek out the teachings of Epstein and Aoyama. Since Kuo does not provide guidance on the construction materials or spectral characteristics of the layers, a skilled artisan would have been behooved to seek out teachings to find the optimal characteristics of the layers. By reading the disclosures of Epstein and Aoyama, the skilled artisan would discover that flat transmission and reflection spectra of these layers allows for good color quality in the display.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael H. Caley whose telephone number is (571) 272-2286. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael H. Caley
January 21, 2006
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